

1  
2 I claim:

3  
4 1. An apparatus for handling a work string disposed within a rotary table on a rig  
5 comprising:

6 -a bowl insert having an inner portion, said inner portion having a taper of greater than 11  
7 degrees;

8 -slip means for securing the work string within the rotary table, said slip means having an  
9 outer portion configured to fit into said inner portion of said bowl insert, said outer portion  
10 having a taper complementary of the bowl insert taper of greater than 11 degrees.

11 2. The apparatus of claim 1 wherein said inner portion taper of said bowl insert is  
12 between 12 degrees and 15 degrees.

13 3. The apparatus of claim 1 wherein said outer portion taper of said slip means is between  
14 12 degrees and 14 degrees.

15 4. The apparatus of claim 1 wherein said inner portion taper of said bowl insert is 12  
16 degrees and said outer portion taper of said slip means is a complimentary angle of 12 degrees.

17 5. The apparatus of claim 1 wherein said slip means comprises a first, second and third  
18 slip means containing a plurality of dies for engaging the work string.

19 6. A method of running a landing string into a well on a rig, the method comprising:

20 -providing a bowl insert having an inner portion, said inner portion having a taper of  
21 greater than 11 degrees; a slip device having dies for securing the work string within a rotary table  
22 on the rig, said slip device having an outer portion configured to fit into said inner portion of said

1 bowl insert, said outer portion having a taper complementary of the bowl insert taper;

2 -attaching the landing string to a bottom hole assembly;

3 -lowering a first tubular of the landing string into the rotary table located on the rig;

4 -placing the slip device into the rotary;

5 -lowering the first tubular;

6 -engaging the dies of the slip device with the first tubular;

7 -transferring the weight of the landing string axially;

8 -transferring the weight of the landing string transversely;

9 -suspending the landing string within the rotary table;

10 -disengaging the dies from the first tubular;

11 -removing the slip device from the rotary table.

12 7. The method of claim 6 further comprising:

13 -lowering a second tubular of the landing string into the rotary table located on the rig;

14 -placing the slip device into the rotary;

15 -lowering the second tubular;

16 -engaging the dies of the slip device with the second tubular;

17 -transferring the weight of the landing string axially;

18 -transferring the weight of the landing string transversely;

19 -suspending the landing string within the rotary table;

20 -disengaging the dies from the second tubular;

21 -removing the slip device from the rotary table.

22 8. The method of claim 6 further comprising:

1 -lowering a third tubular of the landing string into the rotary table located on the rig;  
2 -placing the slip device into the rotary;  
3 -lowering the third tubular;  
4 -engaging the dies of the slip device with the third tubular;  
5 -transferring the weight of the landing string axially;  
6 -transferring the weight of the landing string transversely;  
7 -suspending the landing string within the rotary table;  
8 -disengaging the dies from the third tubular;  
9 -removing the slip device from the rotary table.

10 9. The method of claim 6 wherein said inner portion taper of said bowl insert is between  
11 11 degrees and 15 degrees relative to the vertical axis.

12 10. The method of claim 6 wherein said outer portion taper of said slip means is between  
13 12 degrees and 14 degrees relative to the vertical axis.

14 11. The method of claim 6 wherein said inner portion taper of said bowl insert is 12  
15 degrees relative to the vertical axis and said outer portion taper of said slip means is a  
16 complimentary angle of 12 degrees relative to the vertical axis.

17 12. An apparatus for handling a landing string disposed within a rotary table on a rig, and  
18 wherein said landing string is attached to a bottom hole assembly disposed within a well, the  
19 apparatus comprising:

20 -a bowl insert having an inner portion, said inner portion having a taper of greater than 11  
21 degrees relative to vertical;

22 -slip device having a plurality of die inserts for engaging the work string within the rotary

1 table, said slip means having an outer portion configured to fit into said inner portion of said bowl  
2 insert, said outer portion having a taper complementary of the bowl insert taper.

3 13. The apparatus of claim 12 wherein said inner portion taper of said bowl insert is  
4 between 11 degrees and 15 degrees relative to vertical.

5 14. The apparatus of claim 12 wherein said outer portion taper of said slip means is  
6 between 11 degrees and 13 degrees relative to vertical.

7 15. The apparatus of claim 12 wherein said inner portion taper of said bowl insert is 12  
8 degrees relative to vertical and said outer portion taper of said slip means is a complimentary  
9 angle of 12 degrees.

10 16. The apparatus of claim 12 wherein said slip means comprises a first, second and third  
11 slip means containing a plurality of dies for engaging the work string.

12 17. The apparatus of claim 12 wherein said bottom hole assembly is a casing string

13 18. The apparatus of claim 17 wherein said landing string is a drill string

14 19. The apparatus of claim 18 wherein said rig is a floatable rig situated on an ocean,  
15 above an ocean floor.

16 20. The apparatus of claim 19 wherein said drill string contains a casing hanger adapted  
17 to engage a sub sea tree on the ocean floor.

18 21. A tubular handling device comprising:

19 -a first slip having an arcuate inner face and an outer face, wherein said inner face  
20 has a first longitudinally disposed slot and wherein said first longitudinally disposed slot has a first  
21 ledge therein and wherein said first slip has an outer portion having a taper of greater than 11  
22 degrees relative to vertical;

1                   -a second slip being connected to said first slip, said second slip having an arcuate  
2 inner face and an outer face, wherein said inner face has a second longitudinally disposed slot and  
3 wherein said second longitudinally disposed slot has a second ledge therein and wherein said  
4 second slip has an outer portion having a taper of greater than 11 degrees relative to vertical;

5                   -a third slip having an arcuate inner face and outer face, wherein said inner face has  
6 a third longitudinally disposed slot and wherein said third longitudinally disposed slot has a third  
7 ledge therein and wherein said third slip has an outer portion having a taper of greater than 11  
8 degrees relative to vertical;

9                   -means for connecting said first slip with said second slip and means for connecting  
10 said second slip with said third slip;

11                  -a first insert having a first shoulder that is configured to fit within said first ledge,  
12 and wherein said first insert is capable of transferring a load from said first shoulder to said first  
13 ledge;

14                  -a second insert having a second shoulder that is configured to fit within said  
15 second ledge and wherein said second insert is capable of transferring a load from said second  
16 shoulder to said second ledge;

17                  -a third insert having a third shoulder that is configured to fit within said third  
18 ledge and wherein said third insert capable of transferring a load from said third shoulder to said  
19 third ledge.

20                  22. The tubular handling device of claim 21 further comprising:

21                   -a fourth ledge disposed within said first longitudinally disposed slot;

22                   -a fourth insert having a fourth shoulder that is configured to fit within said fourth

ledge and wherein said fourth insert is capable of transferring a load from said fourth shoulder to said fourth ledge.

23. The tubular handling device of claim 22 further comprising:

-a fifth ledge disposed within said second longitudinally disposed slot;

-a fifth insert having a fifth shoulder that is configured to fit within said fifth ledge

and wherein said fifth insert is capable of transferring a load from said fifth shoulder to said fifth ledge.

24. The tubular handling device of claim 23 further comprising:

-a sixth ledge disposed within said third longitudinally disposed slot;

-a sixth insert having a sixth shoulder that is configured to fit within said sixth

ledge and wherein said sixth insert is capable of transferring a load from said sixth shoulder to said sixth ledge.

25. The tubular handling device of claim 24 wherein said first, second, third, fourth, fifth, and sixth ledge has a bottom surface having an angle between minus 20 degrees to plus 20 degrees relative to a horizontal plane and wherein said first, second, third, fourth, fifth, and sixth shoulder on said inserts has a complimentary angle of between minus 20 degrees to plus 20 degrees.

26. The tubular handling device of claim 25 wherein said inserts are constructed of a low carbon alloy steel material.

27. The tubular handling device of claim 26 wherein said first insert has a first handle member, and said second insert has a second handle member.

28. The tubular handling device of claim 20 further comprising a bowl insert having an

1 inner portion having a mating taper of greater than 11 degrees, and wherein said first, second and  
2 third slips are disposed within said bowl insert.

3 29. A rotary slip apparatus for handling tubular members on a drill rig floor, the rotary  
4 slip apparatus comprising:

5 -a first slip having a first arcuate inner face and an outer face, wherein said inner  
6 face has a first longitudinally disposed slot and wherein said first longitudinally disposed slot has a  
7 first ledge therein and wherein said first slip has an outer portion having a taper of greater than 11  
8 degrees;

9 -a second slip being connected to said first slip, said second slip having a second  
10 arcuate inner face and an outer face and wherein said second slip has an outer portion having a  
11 taper of greater than 11 degrees;

12 -a third slip having a third arcuate inner face and outer face and wherein said third  
13 slip has an outer portion having a taper of greater than 11 degrees;

14 -first means for attaching said first slip with said second slip and second means for  
15 attaching said second slip with said third slip;

16 -a first insert having a first shoulder that is configured to fit within said first ledge,  
17 and wherein said first shoulder transfers a load from said first insert to said first ledge.

18 30. The rotary slip apparatus of claim 29 wherein said inner face of said second slip has a  
19 second longitudinally disposed slot and wherein said second longitudinally disposed slot has a  
20 second ledge therein, and wherein the apparatus further comprises:

21 -a second insert having a second shoulder that is configured to fit within said  
22 second ledge and wherein said second shoulder transfers the load from said second insert to said

1 second ledge.

2 31. The rotary slip apparatus of claim 30 wherein said inner face of said third slip has a  
3 third longitudinally disposed slot and wherein said third longitudinally disposed slot has a third  
4 ledge therein, and wherein the apparatus further comprises:

5 -a third insert having a third shoulder that is configured to fit within said third  
6 ledge and wherein said third shoulder transfers a load from said third insert to said third ledge.

7 32. The rotary slip apparatus of claim 31 further comprising:

8 -a fourth ledge disposed within said first longitudinally disposed slot of said first  
9 slip;

10 -a fourth insert having a fourth shoulder that is configured to fit within said fourth  
11 ledge and wherein said fourth shoulder transfers the load from said fourth insert to said fourth  
12 ledge.

13 33. The rotary slip apparatus of claim 32 further comprising:

14 -a fifth ledge disposed within said second longitudinally disposed slot of said  
15 second slip;

16 -a fifth insert having a fifth shoulder that is configured to fit within said fifth ledge  
17 and wherein said fifth shoulder transfers the load from said fifth insert to said fifth ledge.

18 34. The rotary slip apparatus of claim 33 further comprising:

19 -a sixth ledge disposed within said third longitudinally disposed slot of said third  
20 slip;

21 -a sixth insert having a sixth shoulder that is configured to fit within said sixth  
22 ledge and wherein said sixth shoulder transfers a load from said first insert to said sixth ledge.



1           35. The rotary slip apparatus of claim 34 wherein said first insert, said second insert, and  
2           said third insert are constructed of a low carbon alloy steel material.

3           36. The rotary slip apparatus of claim 35 wherein said first, second, and third ledge has a  
4           bottom surface having an angle of minus twenty (-20) degrees to twenty (20) degrees relative to a  
5           horizontal plane and wherein said first shoulder, second shoulder and third shoulder on said first  
6           insert, said second insert and said third insert has a complimentary angle of minus twenty (-20)  
7           degrees to twenty (20) degrees.

8           37. A method of engaging a tubular member within in a rotary table on a drill rig floor  
9           comprising:

10                 -providing a slip device, said slip device comprising: a first slip having an arcuate  
11           inner face and an outer face, wherein said inner face has a first longitudinally disposed slot and  
12           wherein said first longitudinally disposed slot has a first ledge therein; a second slip being  
13           connected to said first slip, said second slip having an arcuate inner face and an outer face,  
14           wherein said inner face has a second longitudinally disposed slot and wherein said second  
15           longitudinally disposed slot has a second ledge therein; a third slip having an arcuate inner face  
16           and outer face, wherein said inner face has a third longitudinally disposed slot and wherein said  
17           third longitudinally disposed slot has a third ledge therein; a first insert having a shoulder that is  
18           configured to fit within said first ledge; a second insert having a shoulder that is configured to fit  
19           within said second ledge; a third insert having a shoulder that is configured to fit within said third  
20           ledge;

21                 -placing a first tubular member within the rotary table on the drill rig floor;

22                 -inserting the slip device into the rotary table;

1                   -engaging the slip device about the first tubular member so that the first insert, the  
2 second insert and the third insert engage the first tubular member and wherein the first tubular  
3 member is suspended from the rotary table thereby creating a load;

4                   -transferring the load of the first tubular member to the first insert, the second  
5 insert, and the third insert;

6                   -transferring the load of the first insert, the second insert, and the third insert to the  
7 first shoulder, the second shoulder and the third shoulder;

8                   -transferring the load from the first, second and third shoulder to the first, second  
9 and third ledge of the respective first, second and third slip so that the load of the first tubular  
10 member is distributed about the length of the first slip, the second slip and the third slip.

11               38. The method of claim 37 further comprising:

12                   -threadedly connecting a second tubular member to said first tubular member;

13                   -removing the slip device from the rotary table;

14                   -lowering the connected first tubular member and the second tubular member;

15                   -inserting the slip device into the rotary table;

16                   -engaging the slip device about the second tubular member;

17                   -transferring the load of the first and the second tubular member to the first, the  
18 second, and the third insert;

19                   -transferring the load of the first and the second tubular member from the first,  
20 second and third shoulder to the first, second and third ledge of the respective first, second and  
21 third slip so that the load of the first and the second tubular member is distributed about the length  
22 of the first slip, the second slip and the third slip.